

CLAIMS

What is claimed is:

1. A defect managing method for a recording medium, comprising:
recording defect management information representing whether replacement or non-replacement, by a linear replacement operation, of a defective unit of the recording medium is required; and
replacing the defective unit by a replacement unit in a spare area of the recording medium if the recorded defect management information indicates that a defective unit requires replacement by linear replacement, and not replacing the defective unit even if the defective unit was previously designated for linear replacement if the defect management information indicates that the defective unit is not to be replaced by linear replacement.
2. The defect managing method as claimed in claim 1, wherein information representing use or non-use of linear replacement for the recording medium is recorded in a reserved area of a disc certification flag in a defect definition structure (DDS) area of the recording medium, according to a DVD-RAM specification.
3. The defect managing method as claimed in claim 1, wherein information representing use or non-use of linear replacement for a specific area of the recording medium is recorded in a reserved area of a group certification flag in a defect definition structure (DDS) area of the recording medium, according to a DVD-RAM specification.
4. The defect managing method as claimed in claim 2, wherein information representing use or non-use of linear replacement for a specific area of the recording medium is recorded in a reserved area of a group certification flag in a defect definition structure (DDS) area of the recording medium, according to a DVD-RAM specification.
5. The defect managing method as claimed in claim 1, wherein information representing use or non-use of linear replacement is recorded upon initialization of the recording medium.
6. The defect managing method as claimed in claim 2, wherein information representing use or non-use of linear replacement is recorded upon initialization of the recording

medium.

7. The defect managing method as claimed in claim 3, wherein information representing use or non-use of linear replacement is recorded upon initialization of the recording medium.

8. The defect managing method as claimed in claim 1, wherein information representing use or non-use of linear replacement is recorded prior to real time data being recorded on the recording medium.

9. The defect managing method as claimed in claim 2, wherein information representing use or non-use of linear replacement is recorded prior to real time data being recorded on the recording medium.

10. The defect managing method as claimed in claim 3, wherein information representing use or non-use of linear replacement is recorded prior to real time data being recorded on the recording medium.

11. The defect managing method as claimed in claim 4, wherein information representing use or non-use of linear replacement is recorded prior to real time data being recorded on the recording medium.

12. The defect managing method as claimed in claim 1, wherein information representing use or non-use of linear replacement further indicates a plurality of defect management modes and is recorded in a reserved area of a defect definition structure (DDS) of the recording medium.

13. The defect managing method as claimed in claim 12, wherein the defect management information showing the plurality of defect management modes includes information representing that slipping replacement and linear replacement is applied with respect to all data on the recording medium, information representing that linear replacement is selectively applied according to a type of data on the recording medium, and information representing that linear replacement is not applied to all data on the recording medium.

14. The defect managing method as claimed in claim 2, wherein information representing use or non-use of linear replacement further indicates a plurality of defect management modes and is recorded in a reserved area of the defect definition structure (DDS) of the recording medium.

15. The defect managing method as claimed in claim 14, wherein the defect management information showing the plurality of defect management modes includes information representing that slipping replacement and linear replacement is applied with respect to all data on the recording medium, information representing that linear replacement is selectively applied according to a type of data on the recording medium, and information representing that linear replacement is not applied to all data on the recording medium.

16. The defect managing method as claimed in claim 3, wherein information representing use or non-use of linear replacement further indicates a plurality of defect management modes and is recorded in a reserved area of the defect definition structure (DDS) of the recording medium.

17. The defect managing method as claimed in claim 16, wherein the defect management information showing the plurality of defect management modes includes information representing that slipping replacement and linear replacement is applied with respect to all data on the recording medium, information representing that linear replacement is selectively applied according to a type of data on the recording medium, and information representing that linear replacement is not applied to all data on the recording medium.

18. The defect managing method as claimed in claim 5, wherein information representing use or non-use of linear replacement further indicates a plurality of defect management modes and is recorded in a reserved area of a defect definition structure (DDS) of the recording medium.

19. The defect managing method as claimed in claim 18, wherein the defect management information showing the plurality of defect management modes includes information representing that slipping replacement and linear replacement is applied with respect to all data on the recording medium, information representing that linear replacement is selectively applied according to a type of data on the recording medium, and information

representing that linear replacement is not applied to all data on the recording medium.

20. The defect managing method as claimed in claim 1, wherein information representing use or non-use of linear replacement indicates use of the defect managing method for real time recording in which linear replacement is not performed by allocating only the spare area for slipping replacement.

21. The defect managing method as claimed in claim 20, wherein the spare area for slipping replacement is allocated to a last group of the recording medium, and the information representing use or non-use of linear replacement is recorded in a reserved area of a disc definition structure (DDS) and a primary defect list (PDL) of a recording medium.

22. The defect managing method as claimed in claim 2, wherein information representing use or non-use of linear replacement indicates use of the defect managing method for real time recording in which linear replacement is not performed by allocating only the spare area for slipping replacement.

23. The defect managing method as claimed in claim 22, wherein the spare area for slipping replacement is allocated to a last group of the recording medium, and the information representing use or non-use of linear replacement is recorded in the reserved area of the disc definition structure (DDS) and a primary defect list (PDL) of the recording medium.

24. The defect managing method as claimed in any of claims 3, wherein information representing use or non-use of linear replacement indicates use of the defect managing method for real time recording in which linear replacement is not performed by allocating only the spare area for slipping replacement.

25. The defect managing method as claimed in claim 24, wherein the spare area for slipping replacement is allocated to a last group of the recording medium, and the information representing use or non-use of linear replacement is recorded in the reserved area of the disc definition structure (DDS) and a primary defect list (PDL) of the recording medium.

26. The defect managing method as claimed in claim 5, wherein information representing use or non-use of linear replacement indicates use of the defect managing method

for real time recording in which linear replacement is not performed by allocating only the spare area for slipping replacement.

27. The defect managing method as claimed in claim 26, wherein the spare area for slipping replacement is allocated to a last group of the recording medium, and the information representing use or non-use of linear replacement is recorded in a reserved area of a disc definition structure (DDS) and a primary defect list (PDL) of the recording medium.

28. The defect managing method as claimed in claim 8, wherein information representing use or non-use of linear replacement indicates use of the defect managing method for real time recording in which linear replacement is not performed by allocating only the spare area for slipping replacement.

29. The defect managing method as claimed in claim 28, wherein the spare area for slipping replacement is allocated to a last group of the recording medium, and the information representing use or non-use of linear replacement is recorded in a reserved area of a disc definition structure (DDS) and a primary defect list (PDL) of the recording medium.

30. The defect managing method as claimed in any of claims 12, wherein information representing use or non-use of linear replacement indicates use of the defect managing method for real time recording in which linear replacement is not performed by allocating only the spare area for slipping replacement.

31. The defect managing method as claimed in claim 30, wherein the spare area for slipping replacement is allocated to a last group of the recording medium, and the information representing use or non-use of linear replacement is recorded in the reserved area of the disc definition structure (DDS) and a primary defect list (PDL) of the recording medium.

32. The defect managing method as claimed in claim 1, wherein when information representing use or non-use of linear replacement represents non-use of linear replacement, linear replacement is not used for recording real time data on the recording medium, but linear replacement is used for data other than real time data.

33. The defect managing method as claimed in claim 2, wherein when information

representing use or non-use of linear replacement represents non-use of linear replacement, linear replacement is not used for recording real time data on the recording medium, but linear replacement is used for data other than real time data.

34. The defect managing method as claimed in claim 3, wherein when information representing use or non-use of linear replacement represents non-use of linear replacement, linear replacement is not used for recording real time data on the recording medium, but linear replacement is used for data other than real time data.

35. The defect managing method as claimed in claim 5, wherein when information representing use or non-use of linear replacement represents non-use of linear replacement, linear replacement is not used for recording real time data on the recording medium, but linear replacement is used for data other than real time data.

36. The defect managing method as claimed in claim 8, wherein when information representing use or non-use of linear replacement represents non-use of linear replacement, linear replacement is not used for recording real time data on the recording medium, but linear replacement is used for data other than real time data.

37. The defect managing method as claimed in claim 12, wherein when information representing use or non-use of linear replacement represents non-use of linear replacement, linear replacement is not used for recording real time data on the recording medium, but linear replacement is used for data other than real time data.

38. The defect managing method as claimed in claim 20, wherein when information representing use or non-use of linear replacement represents non-use of linear replacement, linear replacement is not used for recording real time data on the recording medium, but linear replacement is used for data other than real time data.

39. The defect managing method as claimed in claim 1, wherein when information representing use or non-use of linear replacement represents non-use of linear replacement, linear replacement is not used for recording data to the recording medium regardless of whether data to be recorded on the recording medium is real time data.

40. The defect managing method as claimed in claim 2, wherein when information representing use or non-use of linear replacement represents non-use of linear replacement, linear replacement is not used for recording data to the recording medium regardless of whether data to be recorded on the recording medium is real time data.

41. The defect managing method as claimed in claim 3, wherein when information representing use or non-use of linear replacement represents non-use of linear replacement, linear replacement is not used for recording data to the recording medium regardless of whether data to be recorded on the recording medium is real time data.

42. The defect managing method as claimed in claim 5, wherein when information representing use or non-use of linear replacement represents non-use of linear replacement, linear replacement is not used for recording data to the recording medium regardless of whether data to be recorded on the recording medium is real time data.

43. The defect managing method as claimed in claim 8, wherein when information representing use or non-use of linear replacement represents non-use of linear replacement, linear replacement is not used for recording data to the recording medium regardless of whether data to be recorded on the recording medium is real time data.

44. The defect managing method as claimed in claim 12, wherein when information representing use or non-use of linear replacement represents non-use of linear replacement, linear replacement is not used for recording data to the recording medium regardless of whether data to be recorded on the recording medium is real time data.

45. The defect managing method as claimed in claim 20, wherein when information representing use or non-use of linear replacement represents non-use of linear replacement, linear replacement is not used for recording data to the recording medium regardless of whether data to be recorded on the recording medium is real time data.

46. The defect managing method as claimed in claim 32, wherein when information representing use or non-use of linear replacement represents non-use of linear replacement, linear replacement is not used for recording data to the recording medium regardless of whether data to be recorded on the recording medium is real time data.

47. The defect managing method as claimed in claim 1, further comprising:
canceling linear replacement of a defect of an area of the recording medium where real time data is to be recorded when the information representing use or non-use of linear replacement represents the non-use of linear replacement.

48. The defect managing method as claimed in claim 47, wherein the linear replacement is canceled based on a flag, indicating that the linear replacement has been cancelled, in a reserved bit in a secondary defect list (SDL) of the recording medium, with information indicating that a defective unit has been replaced being stored in a Forced Re-Assignment Marking (FRM) bit of the SDL entry and a start sector number of the defective unit and the start sector number of a replacement unit being stored in the SDL entry.

49. The defect managing method as claimed in claim 47, wherein only a start sector number of a defective unit is left in a secondary defect list (SDL) of the recording medium, with information indicating that a defective unit has not been replaced being stored in a Forced Re-Assignment Marking (FRM) bit of the SDL entry showing whether the defective unit has been replaced and information representing that the defective unit has not been replaced is stored in the start sector number of a replacement unit being stored in the SDL entry.

50. The defect managing method as claimed in claim 2, further comprising:
canceling linear replacement of a defect of an area of the recording medium where real time data is to be recorded when the information representing use or non-use of linear replacement represents the non-use of linear replacement.

51. The defect managing method as claimed in claim 50, wherein the linear replacement is canceled based on a flag, indicating that the linear replacement has been cancelled, in a reserved bit in a secondary defect list (SDL) of the recording medium, with information indicating that a defective unit has been replaced being stored in a Forced Re-Assignment Marking (FRM) bit of the SDL entry and a start sector number of the defective unit and the start sector number of a replacement unit being stored in the SDL entry.

52. The defect managing method as claimed in claim 50, wherein only a start sector number of a defective unit is left in a secondary defect list (SDL) of the recording medium, with

information indicating that a defective unit has not been replaced being stored in a Forced Re-Assignment Marking (FRM) bit of the SDL entry showing whether the defective unit has been replaced and information representing that the defective unit has not been replaced is stored in the start sector number of a replacement unit being stored in the SDL entry.

53. The defect managing method as claimed in claim 3, further comprising:
canceling linear replacement of a defect of an area of the recording medium where real time data is to be recorded when the information representing use or non-use of linear replacement represents the non-use of linear replacement.

54. The defect managing method as claimed in claim 53, wherein the linear replacement is canceled based on a flag, indicating that the linear replacement has been cancelled, in a reserved bit in a secondary defect list (SDL) of the recording medium, with information indicating that a defective unit has been replaced being stored in a Forced Re-Assignment Marking (FRM) bit of the SDL entry and a start sector number of the defective unit and the start sector number of a replacement unit being stored in the SDL entry.

55. The defect managing method as claimed in claim 53, wherein only a start sector number of a defective unit is left in a secondary defect list (SDL) of the recording medium, with information indicating that a defective unit has not been replaced being stored in a Forced Re-Assignment Marking (FRM) bit of the SDL entry showing whether the defective unit has been replaced and information representing that the defective unit has not been replaced is stored in the start sector number of a replacement unit being stored in the SDL entry.

56. The defect managing method as claimed in claim 5, further comprising:
canceling linear replacement of a defect of an area of the recording medium where real time data is to be recorded when the information representing use or non-use of linear replacement represents the non-use of linear replacement.

57. The defect managing method as claimed in claim 56, wherein the linear replacement is canceled based on a flag, indicating that the linear replacement has been cancelled, in a reserved bit in a secondary defect list (SDL) of the recording medium, with information indicating that a defective unit has been replaced being stored in a Forced Re-Assignment Marking (FRM) bit of the SDL entry and a start sector number of the defective unit

and the start sector number of a replacement unit being stored in the SDL entry.

58. The defect managing method as claimed in claim 56, wherein only a start sector number of a defective unit is left in a secondary defect list (SDL) of the recording medium, with information indicating that a defective unit has not been replaced being stored in a Forced Re-Assignment Marking (FRM) bit of the SDL entry showing whether the defective unit has been replaced and information representing that the defective unit has not been replaced is stored in the start sector number of a replacement unit being stored in the SDL entry.

59. The defect managing method as claimed in claim 8, further comprising:
canceling linear replacement of a defect of an area of the recording medium where real time data is to be recorded when the information representing use or non-use of linear replacement represents the non-use of linear replacement.

60. The defect managing method as claimed in claim 59, wherein the linear replacement is canceled based on a flag, indicating that the linear replacement has been cancelled, in a reserved bit in a secondary defect list (SDL) of the recording medium, with information indicating that a defective unit has been replaced being stored in a Forced Re-Assignment Marking (FRM) bit of the SDL entry and a start sector number of the defective unit and the start sector number of a replacement unit being stored in the SDL entry.

61. The defect managing method as claimed in claim 59, wherein only a start sector number of a defective unit is left in a secondary defect list (SDL) of the recording medium, with information indicating that a defective unit has not been replaced being stored in a Forced Re-Assignment Marking (FRM) bit of the SDL entry showing whether the defective unit has been replaced and information representing that the defective unit has not been replaced is stored in the start sector number of a replacement unit being stored in the SDL entry.

62. The defect managing method as claimed in claim 12, further comprising:
canceling linear replacement of a defect of an area of the recording medium where real time data is to be recorded when the information representing use or non-use of linear replacement represents the non-use of linear replacement.

63. The defect managing method as claimed in claim 62, wherein the linear

replacement is canceled based on a flag, indicating that the linear replacement has been cancelled, in a reserved bit in a secondary defect list (SDL) of the recording medium, with information indicating that a defective unit has been replaced being stored in a Forced Re-Assignment Marking (FRM) bit of the SDL entry and a start sector number of the defective unit and the start sector number of a replacement unit being stored in the SDL entry.

64. The defect managing method as claimed in claim 62, wherein only a start sector number of a defective unit is left in a secondary defect list (SDL) of the recording medium, with information indicating that a defective unit has not been replaced being stored in a Forced Re-Assignment Marking (FRM) bit of the SDL entry showing whether the defective unit has been replaced and information representing that the defective unit has not been replaced is stored in the start sector number of a replacement unit being stored in the SDL entry.

65. The defect managing method as claimed in claim 20, further comprising:
canceling linear replacement of a defect of an area of the recording medium where real time data is to be recorded when the information representing use or non-use of linear replacement represents the non-use of linear replacement.

66. The defect managing method as claimed in claim 65, wherein the linear replacement is canceled based on a flag, indicating that the linear replacement has been cancelled, in a reserved bit in a secondary defect list (SDL) of the recording medium, with information indicating that a defective unit has been replaced being stored in a Forced Re-Assignment Marking (FRM) bit of the SDL entry and a start sector number of the defective unit and the start sector number of a replacement unit being stored in the SDL entry.

67. The defect managing method as claimed in claim 65, wherein only a start sector number of a defective unit is left in a secondary defect list (SDL) of the recording medium, with information indicating that a defective unit has not been replaced being stored in a Forced Re-Assignment Marking (FRM) bit of the SDL entry showing whether the defective unit has been replaced and information representing that the defective unit has not been replaced is stored in the start sector number of a replacement unit being stored in the SDL entry.

68. The defect managing method as claimed in claim 32, further comprising:
canceling linear replacement of a defect of an area of the recording medium where real

time data is to be recorded when the information representing use or non-use of linear replacement represents the non-use of linear replacement.

69. The defect managing method as claimed in claim 68, wherein the linear replacement is canceled based on a flag, indicating that the linear replacement has been cancelled, in a reserved bit in a secondary defect list (SDL) of the recording medium, with information indicating that a defective unit has been replaced being stored in a Forced Re-Assignment Marking (FRM) bit of the SDL entry and a start sector number of the defective unit and the start sector number of a replacement unit being stored in the SDL entry.

70. The defect managing method as claimed in claim 68, wherein only a start sector number of a defective unit is left in a secondary defect list (SDL) of the recording medium, with information indicating that a defective unit has not been replaced being stored in a Forced Re-Assignment Marking (FRM) bit of the SDL entry showing whether the defective unit has been replaced and information representing that the defective unit has not been replaced is stored in the start sector number of a replacement unit being stored in the SDL entry.

71. The defect managing method as claimed in claim 39, further comprising:
canceling linear replacement of a defect of an area of the recording medium where real time data is to be recorded when the information representing use or non-use of linear replacement represents the non-use of linear replacement.

72. The defect managing method as claimed in claim 71, wherein the linear replacement is canceled based on a flag, indicating that the linear replacement has been cancelled, in a reserved bit in a secondary defect list (SDL) of the recording medium, with information indicating that a defective unit has been replaced being stored in a Forced Re-Assignment Marking (FRM) bit of the SDL entry and a start sector number of the defective unit and the start sector number of a replacement unit being stored in the SDL entry.

73. The defect managing method as claimed in claim 71, wherein only a start sector number of a defective unit is left in a secondary defect list (SDL) of the recording medium, with information indicating that a defective unit has not been replaced being stored in a Forced Re-Assignment Marking (FRM) bit of the SDL entry showing whether the defective unit has been replaced and information representing that the defective unit has not been replaced is stored in

the start sector number of a replacement unit being stored in the SDL entry.

74. The defect managing method as claimed in any one of claims 1, 2, 3, 5, 8, 12, 20, 32, 39 and 47, further comprising:

recording only the start sector number of a unit having a defect generated while using a recording medium on which information that the linear replacement defect management will not be used has been recorded, in a secondary defect list (SDL), recording information representing that a defective unit has not been replaced in a Forced Re-Assignment Marking (FRM) bit of the SDL entry showing whether the defective unit has been replaced, and recording information that the defective unit has not been replaced in the start sector number of a replacement unit in the SDL entry.

75. The defect managing method as claimed in claim 74, further comprising:

performing defect management based on linear replacement when a defect is generated during use of a recording medium on which information that the linear replacement defect management will be used has been recorded.

76. The defect managing method as claimed in any one of claims 1, 2, 3, 5, 8, 12, 20, 32, 39 and 47, further comprising:

performing defect management based on linear replacement when a defect is generated during use of a recording medium on which information that the linear replacement defect management will be used has been recorded.

77. The defect managing method as claimed in claim 1, wherein defect management information includes positions of the defective unit and a corresponding replacement unit.